

Appln No. 09/627,573

Amdt date October 6, 2005

Reply to Office action of June 21, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A signal embodied in a carrier wave for transporting ~~[[An]]~~ an impairment compensation sequence for use in a communications system, the communications system susceptible to one or more potential impairments each periodic in an integer number of symbols transmitted across a communications channel, the impairment compensation sequence comprising:

N phases, wherein N is selected such that each potential impairment, if present, is periodic therein; and

a sequence of symbols, the sequence organized to place ~~at least one~~ a positive and a negative instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases~~[[,]]~~.

~~wherein the impairment compensation sequence is encoded by or transmitted in at least one readable medium selected from the set of a disk, tape or other magnetic, optical, or electronic storage medium and a network, wireline, a wireless or other communications medium.~~

2. (Currently Amended) The ~~impairment compensation sequence~~ signal of claim 1 wherein the potential impairments include at least one of robbed-bit signaling, padding and a combination of robbed-bit signaling and padding.

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3. (Currently Amended) The ~~impairment—compensation~~ sequence signal of claim 1 wherein the sequence includes a number of segments, the number corresponding to a number of elements in the predetermined set of symbols.

4 (Currently Amended) The ~~impairment—compensation~~ sequence signal of claim 1 wherein the predetermined set of symbols are chosen from at least a subset of a universal pulse code modulation (PCM) codeword set.

5. (Currently Amended) The ~~impairment—compensation~~ sequence signal of claim 4 wherein the subset is selected in accordance with power constraints.

6. (Currently Amended) The ~~impairment—compensation~~ sequence signal of claim 1 wherein the N phases include 24 time phases.

7. (Currently Amended) The ~~impairment—compensation~~ sequence signal of claim 1 wherein N is a least common multiple of respective periods of each of the potential impairments.

8. (Currently Amended) The ~~impairment—compensation~~ sequence signal of claim 1 wherein the sequence is organized to place at least two instances of the symbol from the predetermined set of symbols in each phase, an average of

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received values corresponding to the at least two improving an estimation of the symbol.

9. (Currently Amended) The ~~impairment—compensation sequence~~ signal of claim 1 wherein the sequence includes a plurality of segments each corresponding to respective symbols of the predetermined set thereof, each segment having a portion therein repeated at least once, each segment providing at least two instances of one of a positive reference symbol, a negative reference symbol, a positive training symbol, and a negative training symbol.

10. (Currently Amended) A communication system susceptible to one or more potential impairments each periodic in an integer number of symbols transmitted across a communications channel, the communication system comprising:

a receiver to receive an impairment compensation sequence, the impairment compensation sequence including:

N phases, wherein N is selected such that each potential impairment, if present, is periodic therein; and

a sequence of symbols, the sequence organized to place ~~at least one~~ a positive and a negative instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases; and

an equalizer to equalize the impairment compensation sequence, the equalizer producing amplitude estimates of the sequence of symbols.

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11. (Original) The communications system of claim 10 wherein the sequence includes a number of segments, the number corresponding to a number of elements in the predetermined set of symbols.

12. (Original) The communications system of claim 10 wherein the potential impairment includes at least one of robbed-bit signaling, padding and a combination of robbed-bit signaling and padding.

13. (Original) The communications system of claim 10 wherein the predetermined set of symbols includes at least a subset of a universal pulse code modulation (PCM) codeword set.

14. (Original) The communications system of claim 10 wherein the N phases include 24 time phases.

15. (Original) The communications system of claim 10 wherein N is a least common multiple of respective periods of each of the potential impairments.

16. (Previously Presented) The communications system of claim 10 wherein the sequence is organized to place at least two instances of the symbol from the predetermined set of symbols in each phase, an average of received values corresponding to the at least two instances improving an estimation of the symbol.

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17. (Currently Amended) A receiver for receiving data over a communications channel susceptible to one or more potential impairments each periodic in an integer number of symbols transmitted across a communications channel, the receiver comprising:

a demodulator for demodulating a modulated impairment compensation sequence, the impairment compensation sequence including:

N phases, wherein N is selected such that each potential impairment, if present, is periodic therein; and

a sequence of amplitudes transmitted from terminal equipment, the sequence organized to place ~~at least one~~ a positive and a negative instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases; and

a decoder for decoding the sequence of amplitudes.

18. (Currently Amended) A method of establishing communication across a channel, the communication susceptible to one or more potential impairments each periodic in an integer number of symbols, the method comprising:

receiving a sequence of symbols, the sequence organized to place ~~at least one~~ a positive and a negative instance of each symbol from a predetermined set of symbols in each of the N phases, wherein N is selected such that each potential impairment, if present, is periodic therein; and

detecting potential impairments, if present, corresponding to each of the N phases.

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19. (Original) The method of claim 18, wherein the channel includes a digital portion of a Public Switched Telecommunications Network (PSTN) and wherein the potential impairments include at least one of robbed-bit signaling (RBS), padding, and a combination of robbed-bit signaling and padding in the digital portion of the PSTN.

20. (Original) The method recited in claim 18 wherein the sequence of symbols is a digital impairment learning (DIL) sequence.

21. (Original) The method recited in claim 18 wherein N is a least common multiple of respective periods of each of the potential impairments.

22. (Original) The method recited in claim 18 wherein the sequence of symbols is organized to place at least two instances of the symbol from the predetermined set of symbols in each phase, an average of received values corresponding to the at least two instances improving an estimation of the symbol.

23. (Original) The method recited in claim 18 wherein the sequence of symbols includes a number of segments, the number corresponding to a number of elements in the predetermined set of symbols.

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24. (Original) The method recited in claim 18 wherein the predetermined set of symbols are chosen from at least a subset of a universal pulse code modulation (PCM) codeword set.

25. (Original) The method recited in claim 24 wherein the subset is selected in accordance with power constraints.

26. (Currently Amended) The ~~impairment compensation~~ sequence communications medium of claim 1 wherein the sequence of symbols is a digital impairment learning (DIL) sequence.

27. (Original) The method recited in claim 18 wherein the sequence of symbols is compatible with a plurality of equalizers, the plurality including partial response type equalizer structures.

28. (Currently Amended) A computer program product comprising:

instructions executable on at least one processor to at least partially implement a communications device; and

said instructions including a communication subset thereof executable to adapt the communications device to establish communication across a channel susceptible to one or more potential impairments each periodic in an integer number of symbols transmitted across the channel, the communications device for receiving an impairment compensation sequence, the impairment compensation sequence including:

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N phases, wherein N is selected such that each potential impairment, if present, is periodic therein; and

a sequence of amplitudes transmitted from terminal equipment, the sequence organized to place ~~at least one~~ a positive and a negative instance of each symbol from a predetermined set of symbols in each phase to allow detection of the potential impairments in each of the N phases.

29. (Original) A computer program product as in claim 28 wherein the instructions are encoded by or transmitted in at least one computer readable medium selected from the set of a disk, tape or other magnetic, optical, or electronic storage medium and a network, wireline, wireless or other communications medium.

Claim 30 (Canceled).

31. (New) The communication system of claim 10, wherein the predetermined set includes two or more symbols.

32. (New) The communication system of claim 31, wherein the impairment compensation sequence includes a plurality of segments and each segment includes the N phases.